

UMATILLA BASIN HABITAT IMPROVEMENT PROJECT

Annual Report

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ABSTRACT

This annual report is in fulfillment of contract obligations with Bonneville Power Administration which is the funding source for the Oregon Department of Fish and Wildlife's Umatilla Basin Habitat Improvement Project.

The major activities undertaken during this report period were: procurement of 17 cooperative lease agreements with private landowners, design and layout of 8.6 miles of riparian enclosure fence and 3.0 miles of instream structures, development of five fencing contracts and six instream work contracts. Results include implementation of 10 miles of fencing and 3 miles of instream work. Other activities undertaken during this report period are: data collection from 90 habitat monitoring transects, collection and summarization of temperature data, photopoint establishment, coordination with numerous agencies and tribes and education of all age groups on habitat improvement and protection.

INTRODUCTION

The Northwest Power Planning Council's Fish and Wildlife Program (NPPC 1987) calls for the rehabilitation of steelhead and salmon populations in the Umatilla River (Section 703) (c) (1) to partially mitigate for losses due to the Federal Columbia River Power System. Historically, the Umatilla had large runs of spring and fall chinook salmon, which supported productive Indian and non-Indian fisheries. Most chinook were eliminated from the Umatilla over 50 years ago although a few spring chinook salmon were observed as recently as 1963 (OGC 1963) and fall chinook as recently as 1957 (Thompson and Haas 1960). Annual runs of summer steelhead have averaged 2,224 adults during the past decade with a low of 768 in 1981-82 and high of 3,124 in 1986-87 (Table 1). The Oregon Department of Fish and Wildlife (ODFW) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) are currently implementing a major salmon reestablishment program in the Umatilla Basin. Fall chinook have returned to the river starting in 1985, spring chinook starting 1988 and coho in 1989 (Tables 2, 3 and 4).

Reasons for the decline of anadromous fish in the Umatilla River include passage problems at Columbia and Umatilla River dams and degradation of the quality and quantity of spawning and rearing habitat in the Umatilla. The reduction in the amount of riparian (streamside) habitat along the Umatilla tributaries contributes to poor stream conditions, which resulted in: 1) greater seasonal variation in flows and water temperatures, 2) unstable streambanks, 3) decreased production of food organisms used by fish, and 4) loss of instream and streamside cover (USFWS and NMFS 1982). Approximately 70% of the 422 stream miles inventoried in the Umatilla River Basin need riparian rehabilitation (USFWS and NMFS 1982). Intermittent or nonexistent summer flows in some sections of Meacham, Squaw, Wildhorse, and Birch creeks are due in part to extensive losses of riparian vegetation.

The Umatilla Basin has three agencies working on habitat enhancement projects on their respective lands of jurisdiction: Confederated Tribes of the Umatilla Indian Reservation on reservation lands; United States Department of Agriculture Forest Service (USFS) on Umatilla National Forest lands; and Oregon Department of Fish and Wildlife on private lands.

DESCRIPTION OF AREA

The Umatilla River, in northeast Oregon, originates on the western slopes of the Blue Mountains just east of Pendleton. The river flows in a northwesterly direction for approximately 115 miles to the confluence of the Columbia River at River Mile 289 near Umatilla, Oregon (Figure 1). The Umatilla River drains approximately 2,300 square miles and has an average runoff of about 319,500 acre-feet gaged at the city of Umatilla. In downstream order, major tributaries of the Umatilla River are:

TABLE 1. THREE MILE DAM, UMATILLA RIVER SUMMER STEELHEAD COUNTS

YEAR /3	TOTAL
1979- 80	2, 367
1980- 81	1, 298 /1
1981- 82	768 /1
1982- 83	1264 /1
1983- 84	2062
1984- 85	3436
1985- 86	2959
1986- 87	3124
1987- 88	2481
1988- 89	2476 /2

/1 This number includes 100 fish (25 males & 75 females which were used for brood stock).

/2 Trap shut down due to extreme cold weather between 2-2-89 to 2-24-89.

/3 13 September through June

TABLE 2. THREE MILE DAM, UMATILLA RIVER SPRING CHINOOK COUNTS

YEAR	TOTAL	
	ADULT	JACK
1988	13	0
1989	66	98

TABLE 3. THREE MILE DAM, UMATILLA RIVER FALL CHINOOK COUNTS

YEAR	TOTAL		
	ADULT	JACK	MINI JACK
1985	6	79	0
1986	52	447/2	0
1987	52	52	295
1988	279	176	1283
1989/1	279	247	76

/1 Through January 1990

/2 A Combination of jacks and minijacks

TABLE 4. THREE MILE DAM, UMATILLA RIVER COHO COUNTS

YEAR	TOTAL	
	ADULT	JACK
1987	0	29
1988	742	610
1989 /1	3964	507

/1 Through January 1990

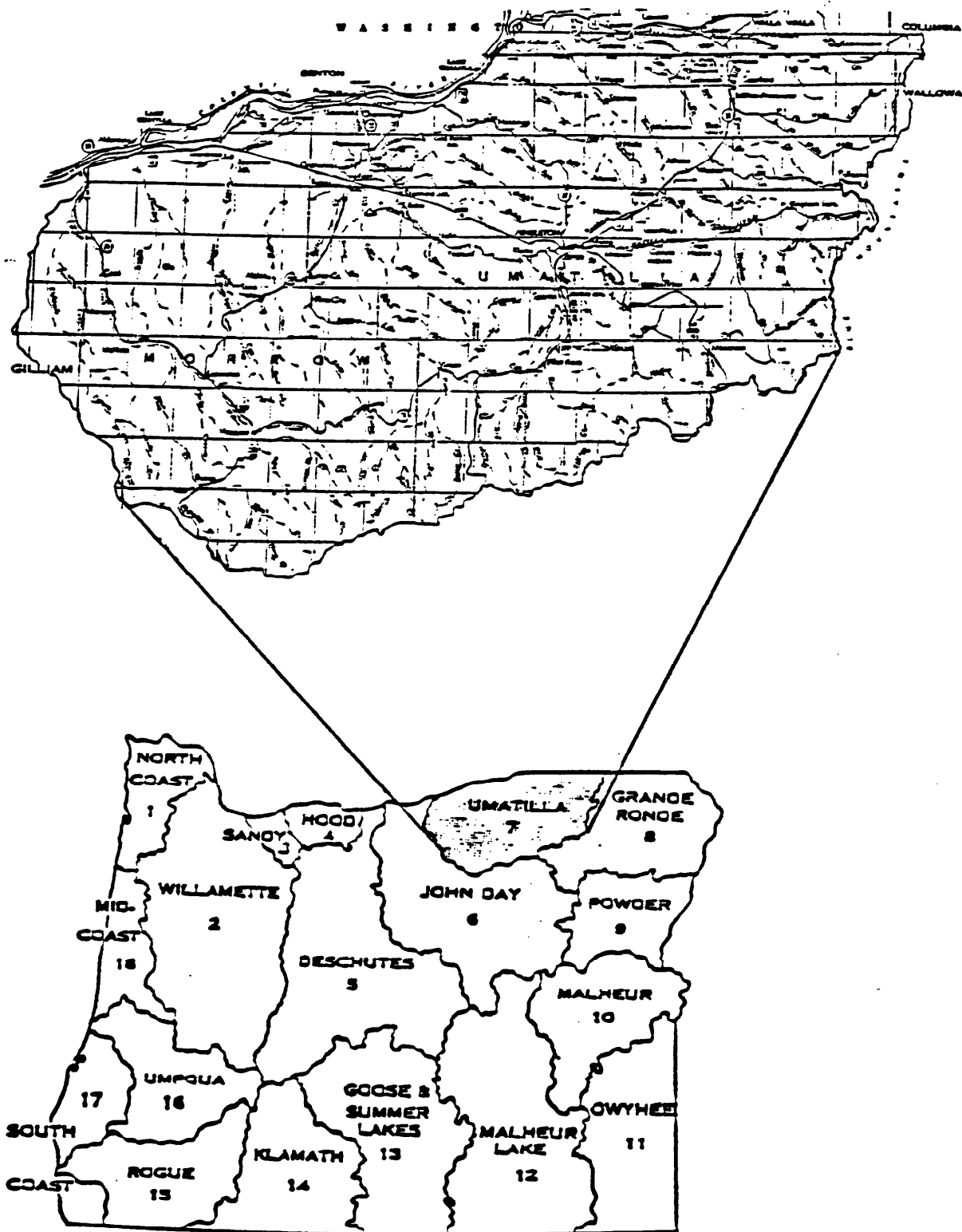


Figure 1. Location of the Umatilla Basin within Oregon.

North and South Forks of the Umatilla River; and Meacham, McKay, Birch, and Butter creeks.

METHODS AND MATERIALS

The goal of this program is to optimize spring chinook and summer steelhead smolt production within the Umatilla River Basin using habitat enhancement measures. To accomplish this goal, work has progressed in three phases:

1. planning and preparation (prework)
2. implementation, and
3. maintenance and evaluation (postwork)

Prework

Prior to actual project implementation the following activities are to be conducted:

1. Project Planning. Project planning includes design and layout of all work to be done on-site, landowner coordination, development of contracts and contract specifications, and obtaining necessary work permits.
2. Project Preparation. Prior to signing leases or construction contracts, all lease boundaries and work sites must be identified, staked and agreed upon by the landowner and/or contractor. Work sites may include easements of right-of-ways, fences, instream structures, offsite water developments, planting, and miscellaneous lease or construction related areas.
3. Riparian Lease Development and Procurement. Riparian lease development and procurement includes meeting with landowners and/or their legal representatives specifically for the purpose of developing an acceptable lease text, and/or signing lease documents.

Implementation

Implementation entails the actual on-the-ground work phase of the program and may include any or all of the following:

1. Instream Work. During late summer and early fall when streamflows are lowest, structures were installed in streams at locations preselected by fishery biologists and/or hydrologists. Structures of various types are used to provide optimum pool/riffle ratios, raise riparian water tables, and collect spawning gravels, thereby increasing quantity and quality of rearing and spawning habitats. Various types of rock placements will be used to stabilize streambanks. Boulders will be used to create small rearing pools and hiding cover.

2. Planting. During early spring, shrub and/or tree species were planted at preselected locations along streams within project areas. Since high summer water temperature appears to be a major limiting factor, plantings are made to provide stream shade, thereby reducing summer water temperatures and increasing salmonid utilization of streams. The maximum shade attainable for most streams in project areas is about 80 percent. The objective of this phase of the program is to reach a minimum of 70% shade and have water temperatures of no more than 68 F within 20 years of project implementation.

During the spring and fall areas disturbed while doing implementation activities were seeded to stabilize soils and discourage weed growth

3. fencing. Destruction of streamside vegetation by domestic livestock has been a major problem within project areas. To provide protection from livestock and thereby promote rapid recovery of existing and planted vegetation, fences were constructed along riparian zones within project areas.

4. Photopoint Establishment. Photopoint establishment includes locating and placing permanent markers at sites from which photographs are to be taken at regular intervals, thereby depicting riparian changes through time. Also associated with photopoint establishment is development of a photopoint notebook for each stream.

5. Habitat Monitoring Transects within selected project areas permanent habitat monitoring transects were established. Channel morphology and vegetative measurements will be repeated at regular intervals and compared with original measurements as a means of quantitatively measuring environmental changes through time.

Postwork

Postwork entails all maintenance and evaluation of work which has been done within the project areas. This phase of the program will usually begin the year following completion of implementation and will continue for several years. Typical postwork activities may include:

1. Maintenance. Following completion of implementation an annual inspection of all project areas will be made. Following this inspection all fence and instream structure maintenance will be done.

2. Photopoint Picture Taking. Standard sized picture will be taken from preselected photopoints prior to implementation of any project area and then during the fall and/or spring of each year. Over time these photopoints

will provide a visual record of changes that occur on project streams. They will show the overall healing process resulting from riparian fencing, planting and instream structures.

3. Habitat Monitoring Transect Data Collection. Immediately after establishing habitat monitoring transects, baseline data will be collected. Data collection will be done on the first year following completion of implementation activities and then at approximately 3 to 5 year intervals.

4. Thermograph Data Collection. Thermographs were installed within or adjacent to project areas. These thermographs are monitored on a regular basis to gather baseline data and detect changes in water temperatures.

RESULTS AND DISCUSSION I. FIELD ACTIVITIES

Field activities are broken down into three successive phases: 1) prework, 2) implementation, and 3) postwork.

Prework

Prework is broken down into four successive stages: 1) riparian lease procurement, 2) project planning, 3) project preparation and 4) field inventories.

1. Project Planning. There are three stages included in project planning: a) design and layout, b) landowner coordination and c) development of contracts and contract specification.

a. Design and Layout. The layout of fencing projects is usually completed while lease negotiations take place. Considerable time is spent undertaking this task to produce a fence line that is structurally feasible and meet the objectives of the state and the landowner. During this report period 8.6 miles of fence lines were laid out on 17 properties. Additionally several miles of fence line were laid out on prospective properties which leases were not signed.

Design and layout of instream structures consists of on-site layout of structures and the development of design criteria for construction purposes. Landowners are usually given the opportunity to review and comment on design and layout of instream structures. The actual quantity and design of structure, however, is determined by the biologist, with input from other professionals. Instream structure design and layout was completed for 3.0 miles of stream on 16 properties. Again, layout and design was completed for several additional miles for which no leases were signed.

Two landowners along East Birch Creek were provided technical assistance with design and layout of instream structure⁵ to improve fish habitat and soil and water conservation. In both cases the landowner did not wish to sign a lease, but was willing to work cooperatively with the state to implement instream work projects to meet objectives for their land uses and fish habitat enhancement. All work was completed and paid for by the landowner. These kinds of cooperative projects are a valuable asset to the program and will continue to be pursued.

b. Landowner Coordination. Project personnel coordinated with 13 landowners prior to and while implementing projects in 1989. Landowner coordination is an integral part of planning for all projects. Access, ground conditions and implementation timing are all important considerations to reduce impacts on the landowner's normal operations.

c. Development of Contracts and Contract Specifications. Considerable time was spent during this report period developing contracts and contract specifications for implementation of fencing and instream work.

Five fencing contracts were developed for the construction of approximately 3.0 miles of thigh tensile smooth wire fence. All contracts were prepared and awarded by field personnel.

Two fence post pounding contracts were prepared and awarded for fencing projects constructed by ODFW and CTUIR personnel and the Pendleton High school Vocational Agriculture class.

Minor modifications were made to the technical specifications for High tensile smooth wire fence

Six contracts were developed to haul and place instream structures and revetments. 3,280 cubic yards of rip rap stone and boulders were placed. All contracts were prepared and awarded by field personnel

d. Obtaining Work Permits. Project personnel coordinated with the Division of State Lands and Army Corps of Engineers to secure fill and removal permits/habitat enhancement waiver reports for all 1989 instream work. Project personnel coordinated with county planners to secure development permits for till in designated floodways. Considerable time was required to prepare applications and correspond with these agencies.

2. Project Preparation. During this report period a total of 9 miles of fenceline were staked or clearly marked prior to construction; 5.1 miles on East Birch Creek and 0.9 mile on Meacham Creek.

The location of instream structures were marked prior to construction along approximately 3.0 miles of East Birch Creek.

3. Riparian Lease Development and Procurement. Riparian lease procurement is the most critical facet of the program. Without landowner leases the program cannot function.

Inherent problems that arise when dealing with landowners make this the most difficult program activity. Landowners receive no monetary compensation for signing a lease, and fringe benefits provided to the landowner as compensation are, marginal at best. To compound the problem the lease becomes an encumbrance on the property title for fifteen years, thereby making this program a low priority for most landowners. To further these difficulties, the landowners dealt with are farmers and ranchers which can be very difficult to contact.

Considering the difficulties described above, the program has had excellent success procuring leases for projects. During this report period 17 leases were signed; 16 on East Birch Creek and one on Meacham Creek, section A (Table 5).

Landowner contacts were initiated on West Birch Creek but time constraints prevented lease procurement. Time constraints also prevented additional lease procurement on Meacham Creek, section A.

Though the program has been successful obtaining leases to date, landowner cooperation can vary greatly, thereby affecting future success. With the relatively small size of most properties in the identified project areas, many leases need to be obtained to provide an adequate amount of stream for implementation.

Implementation

Habitat improvement projects were implemented on approximately 5.4 miles of stream in the Umatilla River drainage in 1989; 4.5 miles on East Birch Creek and 0.9 miles on Meacham Creek, section A (Table 6).

1. Instream Work Six contracts were implemented in 1989 to complete instream work on approximately 3 miles of East Birch Creek.

TABLE 5. COOPERATIVE LEASE AGREEMENTS PROCURED IN 1989.

	LANDOWNER	STREAM	MILES STREAM	PROJECT STATUS
	H. Snider	East Birch	0.70	Complete
	E. Britt	(Magic Mile)		
	L. Russell	" "		
	J. Nash	" "		
	J. Cook	" "		
	J. Lankford	" "		
	A. Patty	" "		
	A. Falk	" "		
	A. Hadden	" "		
	Harris Pine Mills	East Birch	0.70	Complete
11	T. Rugg	East Birch	0.31	Complete
	W. Weinke	Birch	0.45	Complete
	O. Rhinhart	Birch	0.63	Incomplete
	F. Straughn	Birch	0.31	Complete
	McDaniel	Birch	0.90	Complete
	Louisiana Pacific	Meacham	0.63	Complete
			<hr/> 4.63	

TABLE 6. PROJECTS IMPLEMENTED IN 1989

PROJECT	STREAM	MILES STREAM	MILES FENCE	INSTREAM WORK	STATUS
Magic Mile	E. Birch	0.70	1.85	Yes	Complete
Harris Pine Mills	E. Birch	0.10	1.25	No	Complete
Rugg	E. Birch	0.31	0.65	No	Complete
Houser	E. Birch	1.31	2.01	Yes /1	Complete
Weinke	Birch	0.45	0.65	Yes	Complete
Hemphill	Birch	0.38	0.25	No	Complete
McDaniel	Birch	0.90	1.75	Yes	Complete
Stranghan	Birch	0.31	0.69	Yes	Complete
Rhinhart	Birch	0.63	No	Yes	Incomplete
Louisiana Pacific	Meacham	0.63	0.90	No	Complete

/1 Instream work was completed in 1988.

Nine hundred cubic yards of rip rap stone and boulders were required on 0.70 miles of instream work within the "Magic Mile" on East Birch Creek. The "Magic Mile" so named because it required nine leases to obtain one mile of stream, is located just south of the Pilot Hock city limits. This area which has been channelized every other year for the past ten years, is very dynamic and subject to heavy bedload (gravel) movements. These perennial problems have resulted in poor fish habitat and a continual maintenance problem for the landowners. Flock structures were placed in the stream channel to stabilize the bedload movement and add structural diversity. Toe rocks (1-2 cubic yard boulders) and jetties were placed to stabilize streambanks and create rearing pools. Boulder weirs and pinch structures were also placed to create pools and structural diversity in the channel. Strings of individual boulders were placed for thalweg development and stream flow deflection.

A combination of rock jetties and boulder deflectors were placed on the W. Weinke property to stabilize eroding streambanks and create small rearing pools. A total of 160 cubic yards of rip rap stone and boulders was placed on 0.45 mile of stream.

Approximately 1500 cubic yards of rock was placed on a 0.9 mile section of East Birch Creek on the McDaniel property. This project consisted of placing toe rocks, jetties and boulders to stabilize highly erodable stream banks and create structural fish habitat diversity. This section of stream had many cut banks up to 15 feet in height. Erosion of these banks was resulting in large deposits of silt entering the stream. The treatment consisted mainly of placing toe rocks along these stream banks in an attempt to stabilize them.

One hundred cubic yards of rock was placed along a 0.3 mile **section** of stream on the Straughan property. This project on East Birch Creek was treated in a manner similar to the McDaniel property. A series of toe rocks and boulder strings were placed along a cut bank at the upper end of the property. One rock jetty was placed along a smaller eroding bank.

In December of 1989 approximately 640 cubic yards of rock were placed on the Ahinhart property; this project will be completed in 1990. Work completed in this report period consisted of toe rocks, rock jetties, and boulder strings to stabilize eroding streambanks and increase fish habitat diversity. It is planned that an additional 700 cubic yards of rock will be placed in 1990 to complete this project.

2. Planting. Approximately 200 deciduous shrubs of various species were planted on the Hemphill and Straughan properties. Seventy-five of these were purchased with BPA

funds; the remainder were supplied by other entities. A seed mixture of grasses and legumes was planted on all disturbed ground following project implementation.

3. Fencing. Ten miles of fence were constructed. Fencing projects were completed by contract on the Magic Mile, Houser, Louisiana Pacific (Meacham Creek), Louisiana Pacific (East Birch Creek), Rugg, W. Weinke and McDaniel properties. These fences will exclude livestock from 4.87 miles of East Birch Creek and 0.63 mile of Meacham Creek.

The Hemphill and Straughan properties were not constructed by contract; only post pounding was done by contract. The Straughan fence was constructed by student volunteers from the Pendleton High School vocational agriculture class, supervised by ODFW personnel. The Hemphill fence was built by ODFW and CTUIR personnel for training in high tensile smooth wire fencing construction techniques.

4. Photopoint Establishment. Permanent photopoints have only been established on the Meacham Creek (Louisiana Pacific) project. It is anticipated that all projects will have permanently established photopoints before spring green-up occurs in 1990.

5. Habitat Monitoring Transects. Ninety transects were established on East Birch Creek in 1989; transects were established on the "Magic Mile", Houser and Straughan properties.

Postwork

1. Maintenance. Maintenance activities during this report period were minimal because no projects were completed prior to 1989. Maintenance activities were undertaken only on projects that were implemented during 1989.

Some maintenance/reconstruction was required on stream crossings on the Straughan property. Cattle are present along this fence the entire year and, as a result, put heavy pressure on the fence of which the stream crossings are the weakest part.

Weed control was required on some properties.

2. Photopoint Picture Taking Photopoint pictures were taken on the Louisiana Pacific Meacham Creek property. Other photopoints are yet to be established.

3. Habitat Monitor- Transect Data Collection. Data was collected from 90 transects on East Birch Creek; 30 each on the Houser and Straughan properties and 30 on the "Magic Mile". No inferences can be made from this data until there

is another data set to compare: this data alone shows nothing. The next data set is scheduled to be collected in 1992. At that time, comparisons will be made and analyzed.

4. Thermograph Data Collection. Thermographs were deployed at Westgate Canyon and on the Houser property on East Birch Creek during the summer of 1989. Both sites are above Pilot Rock. It is anticipated that over time these thermographs will provide information on the effects of habitat projects on water temperatures in these areas. Maximum daily highs and lows were plotted for both locations (Figures 2 and 3). Mean monthly temperatures were also plotted (Figure 4). These data indicated approximately a 5 degree (Celsius) difference in temperature between the upper Westgate Canyon site to the lower Houser site.

RESULTS AND DISCUSSION II. ADMINISTRATION

Reports

In compliance with our contract, the monthly progress reports, semi-annual capital expenditure reports and annual progress report were prepared and submitted to BPA.

Purchasing

Considerable time was spent soliciting bid requests and purchasing and receiving fencing materials for construction of approximately 10 miles of high tensile smooth wire fence.

All other purchasing consisted of acquiring miscellaneous field and office supplies.

Budget

The annual 1990 budget and statement of work was prepared and submitted to BPA for approval.

Personnel

David Haight (Tech 2) was promoted to a position in Central Point and left this program in mid June. This position remained vacant until October.

Timothy Bailey was transferred from the Grande Ronde Habitat Improvement Project to this program effective October 1 to fill the position vacated by David Haight.

Randal Reeve (Fish Habitat Biologist) transferred to a position in Newport effective October 21, 1989. Subsequently Timothy Bailey under filled the Biologist position and was then hired to permanently fill this position effective December 18, 1989.

WESTGATE CANYON

AUGUST 16 - OCTOBER 11

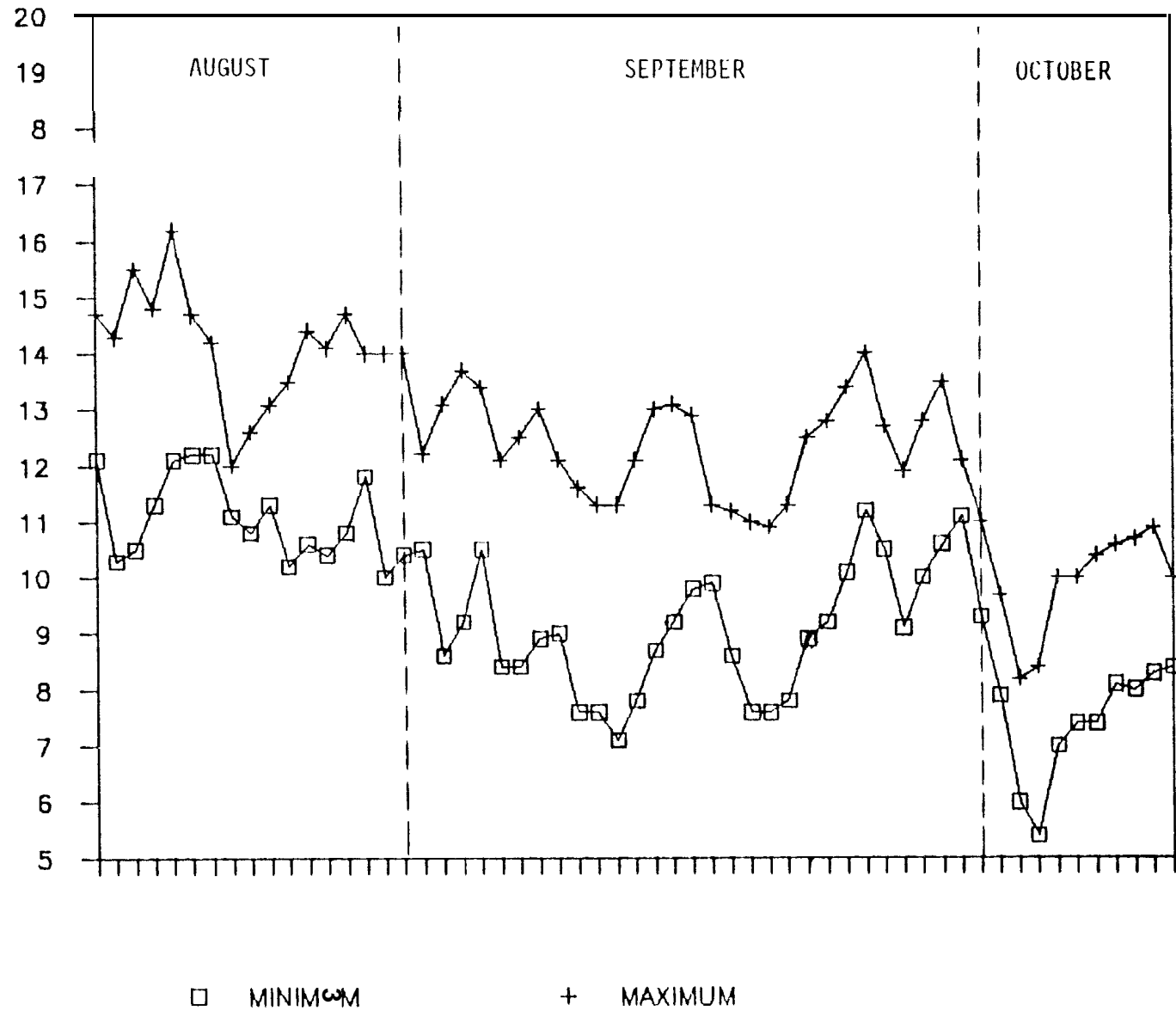


Figure 2 Daily minimum and maximum temperatures at Westgate Canyon, East Birch Creek.

EAST BIRCH CREEK

AUGUST 16 - OCTOBER 11

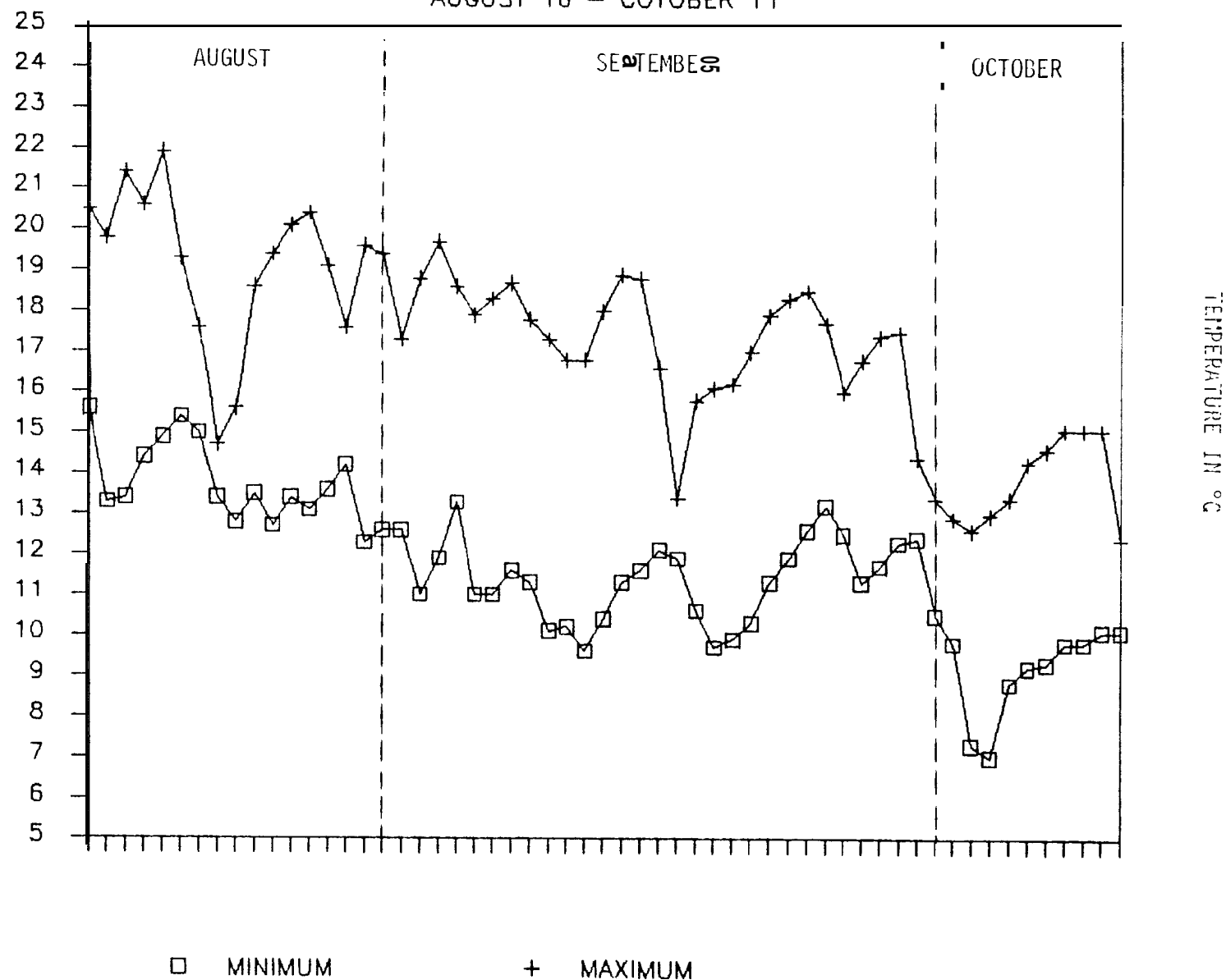
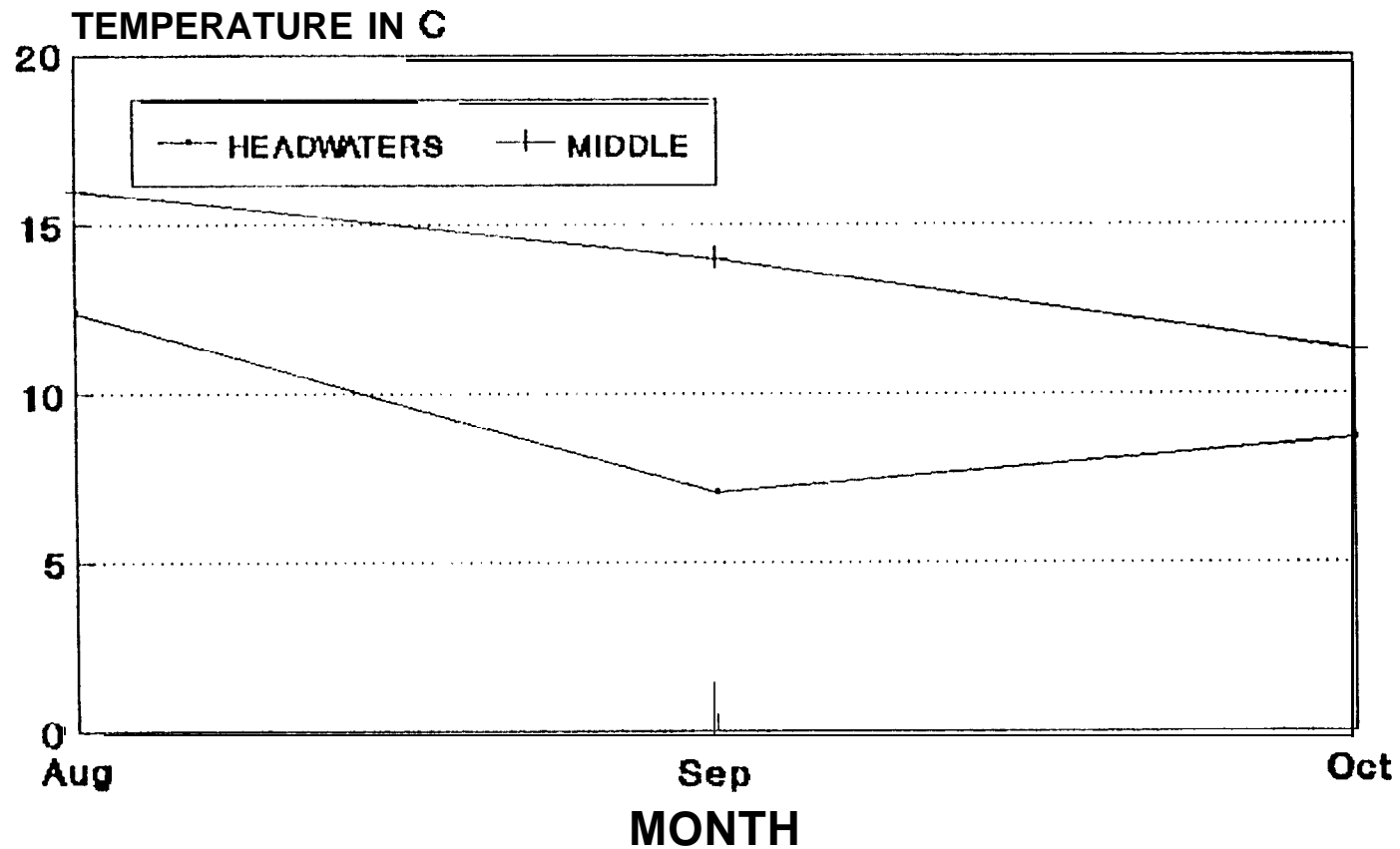


Figure 3. Daily minimum and maximum temperatures at the Houser property, East Birch Creek

EAST BIRCH CREEK

MONTHLY MEAN TEMPERATURE



AUG. 1889 - OCT 1989

Figure 4. Monthly mean temperatures on East Birch Creek.

Two seasonals, Mike Lambert and Curt Been, were hired for a total of approximately 6.5 months during the summer. Primary duties included maintaining project fences, planting grasses and shrubs, establishing and collecting data from habitat monitoring transects and maintaining project equipment.

INTERAGENCY COORDINATION/EDUCATION

Interagency Coordination

A good relationship with the Soil and Water Conservation District (SWCD) is crucial to landowner support of the program. Project personnel attended monthly SWCD meetings and presented a slide show explaining the BPA habitat enhancement program at the annual meeting. SWCD board members assisted project personnel with some landowner negotiations and were instrumental in acquiring at least one lease. Additionally, the SWCD provided funds through a Governors Watershed Enhancement Board (GWEB) grant to construct an interpretive sign explaining a BPA habitat enhancement project on the McDaniel property.

An article explaining the BPA habitat enhancement program was submitted to the SWCD and was subsequently published in the annual Umatilla SWCD newsletter.

A slide presentation was given to the Birch Creek water control district explaining BPA-funded fish habitat enhancement projects. The water control district purchased, for the program, 400 cubic yards of rock at a cost of \$2,000. This rock was used on the Rhinhart property.

Monthly meetings of the Columbia-Blue Mountain Chapter of the Resource Conservation and Development Council were attended as well as their annual meeting and a meeting of the Resource Conservation & Development Council water committee.

The CTUIR and ODFW continue to coordinate their programs. Various project reviews were held as well as coordinating the acquisition of construction materials. CTUIR provided the ODFW with 180 cubic yards of rock and both agencies coordinated purchasing fencing materials to get quantity discounts.

The ODFW, CTUIR AND USFS Umatilla National Forest coordinated development of thermograph data summaries.

Project personnel attended a USFS tour of their proposed habitat projects on the South Fork, Umatilla River. Randal Reeve gave a tour of high tensile smooth wire fencing projects to USFS Range Conservationists.

The Soil Conservation Service (SCS) provided technical assistance to project personnel by providing comments on the design and

layout of instream structures, recommending seed mixtures and generally assisting with landowner negotiations.

The Umatilla County Road Department supplied 80 cubic yards of rock on the McDaniel project to protect a county road from erosion.

Education

Presentations were given to the Pendleton High School Biology and Vocational Agriculture classes on the BPA fish habitat enhancement program.

The Pendleton High School FFA chapter adopted the Straughan property as a field project. They constructed the riparian exclosure fence and will, in the future, monitor the project.

A slide presentation on the BPA fish habitat enhancement program was given at the Pilot Rock Senior Center.

Project personnel coordinated with, and provided professional assistance to, Bill Alexander, a science instructor at the Weston-McEwen High School. Mr. Alexander has undertaken a Governor's Watershed Enhancement Board (GWEB) project as a biology class field project. This project involved the construction of a fence to exclude livestock along 1/4 mile of stream. The biology class will concentrate their studies on monitoring and evaluating the project. Project personnel provided assistance in developing the design for fish population estimates, and electroshocked a section of stream to provide the data.

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